

REMARKS

Summary

Claims 1-12 were pending in the application and all of the claims were rejected in the present Office Action. Claims 1, 5 and 6 have been amended. Claims 2 and 3 have been canceled. Claims 6-12 have been withdrawn. Claims 13-19 have been added. No new matter has been added as a result of this amendment. The Applicants have carefully considered the references and the reasons for rejection advanced by the Examiner, and respectfully traversed the rejections in view of the amendment and discussion presented below.

Restriction/Election Requirement

In the Restriction Requirement dated January 12, 2005, the Examiner stated that two groups existed in this patent application, and were linked claim 1.

The Applicant agrees that claim 1 is a linking claim. Thus, should claim 1 be allowed, all claims linked by claim 1 should also be allowed.

Claim Rejections

Claims 1-3 under 35U.S.C. §102(e) and §103

Claims 1 and 2 were rejected under 35 U.S.C. §102(e) as being anticipated by Yamanaka et al (U.S. Patent Application Publication No. 2003/0007113).

Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamanaka et al in view of Onishi et al (U.S.Pat 6,434,815); Kitamura et al (U.S.pat. 6,610,766); and Kudo et al (U.S.pat. 6,699,956).

The Applicants have rewritten claim 1 to incorporate the elements of claims 2-3 into claim 1, and has canceled claims 2-3. The Applicants respectfully submit a *prima facie* case of obviousness to amended claim 1 has not been made out.

Amended claim 1 recites that the reflector comprises an embossed layer having a reflective surface having a plurality of recesses, an embossed base disposed on ~~at~~^{the} other surface of the embossed layer opposing the reflective surface. In addition, claim 1 specifically recites that the embossed layer comprises a heat-embossed layer and a highly reflective film laminated thereon, the highly reflective film having the reflective surface, and the embossed base comprises a moisture-proof base material, which comprises polyphenylene sulfide or polyvinylidene fluoride.

As compared to claim 1, the Applicants agree with the Examiner that Yamanaka et al lacks a component that moisture-proof base material comprises polyphenylene sulfide or polyvinylidenfluoride.

The Examiner stated that polyphenylene sulfide or polyvinylidenfluoride were very well known as moisture-proof materials because of having low moisture absorption characteristic, as evidenced by Onishi et al, Kitamura et al, and Kudo et al in the rejection under 35 U.S.C. §103(a).

However, even if the polyphenylene sulfide or polyvinyliden fluoride is disclosed in these three references, none of the references provides any suggestion or motivation to modify Yamanaka.

Yamanaka et al discloses a flat substrate 1 that is made of no-alkali glass (see page 7, [0132]). However, Yamanaka et al neither discloses nor suggests replacing the material of the flat substrate 1 from no-alkali glass to another material. Additionally, Yamanaka et al does not provide any motivation for solving the problem of decreasing reflectance of the reflector due to moisture being absorbed into the embossed base. Yamanaka et al merely provides "a reflector which has a two-dimensionally shaped wave radiation member capable of suppressing interference of radiated waves and having a definite radiation characteristic" (see page 1, [0008]).

Therefore, Yamanaka does not disclose the use of polyphenylene sulfide or polyvinyliden fluoride, or provide any motivation for doing so.

Onishi et al discloses that a case 2 of a variable resistor is made of polyamide system nylon such as polyphenylene sulfide (see col. 6, lines 22-25). However, Onishi et al neither discloses nor suggests using the material of the case 2 of the variable resistor to another application such as a reflector for an LCD. Onishi et al only teaches that “it is possible to facilitate the manufacture and management of the side surface adjusting type variable resistor and thereby reduce the manufacturing cost and enhance the productivity” (see col. 12, lines 37-40).

Kitamura et al discloses that “polyvinylidene fluoride (PVDF) is excellent in heat resistance and weather resistance, little in moisture absorption” (see col. 5, lines 30-32). However, Kitamura et al neither discloses nor suggests applying the PVDF to certain designated layers, films or substrates of a reflector for an LCD.

In a similar manner, Kudo et al neither discloses nor suggests applying the fluoro-resin to another application such as a reflector for an LCD. Kudo et al merely teaches “a highly dielectric addition type curable composition which can be prepared as a relatively low viscosity liquid without a need for solvents” (see col. 1, lines 61-67).

Therefore, Onishi et al, Kitamura et al and Kudo et al do not disclose any components of the reflector of claim 1 or provide any motivation to use polyphenylene sulfide or polyvinylidene fluoride for the reflector of the LCD.

For at least these reasons, the references cited by the Examiner do not anticipate or disclose the suggestion or the motivation to modify the references. Therefore, the Applicants believe that claim 1 has overcome the Examiner’s rejection under U.S.C. §102(e) and §103.

Claim 4 under 35U.S.C. §103

Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamanaka et al in view of Tanii et al (JP Pat. No. 4-01-149241A). However, claim 4 is dependent on claim 1 and is patentable for the same reasons that claim 1 is described as patentable above.

Furthermore, the references cited by Examiner do not disclose or suggest a component of the embossed layer recited in claim 4.

The structure of layers in claim 4 comprises the embossed layer, which comprises a lamination of a processed resin layer and a support resin layer, and the moisture-proof base; the processed resin layer is disposed on the reflective surface side having the recesses and the support resin layer is disposed on the moisture-proof base material side.

On the other hand, Tanii et al discloses an optical recording disc which consists of fluoroplastic resin 4, substrate 1, recording film 2 and protective film 3; the upper surface of substrate 1 of the optical recording disc forms recesses (or embosses). However, Tanii et al does not disclose that the substrate comprises the lamination of the processed resin layer and the support resin layer. Therefore, the structure of layers in claim 4 is not disclosed in the Tanii et al.

In addition, Tanii et al is directed towards an optical recording disc, not an LCD structure as is Yamanaka et al. Nor is there any motivation to combine the different structures in different applications.

For at least these reasons, the references cited by the Examiner do not disclose or suggest the embossed layer recited in claim 4. Therefore, the Applicants believe that claim 4 has overcome the Examiner's rejection under U.S.C. §103.

Claim 5 under 35U.S.C. §103

Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamanaka et al in view of Ogiso et al (U.S. Patent Application Publication No. 2003/01994646). However, claim 5 is dependent on claim 1 and is patentable for the same reasons that claim 1 is described as patentable above.

Furthermore, the references cited by Examiner do not disclose or suggest any suggestion or motivation to modify the references.

Ogiso et al discloses an optical recording medium which consists of a substrate 1, a recording layer 2, a reflective layer 3, an adhesive layer 5 and a protective layer 4 (see FIG. 2). However, Ogiso et al neither discloses nor suggests applying the

structure of layers to a reflector of an LCD. Ogiso et al only teaches to “provide an optical recording medium capable of excellent optical recording and replay by developing a dye compound most suitable for recording and replaying information with a light and by using the compound” (see page 3 [0028]).

For at least these reasons, the references cited by the Examiner do not anticipate or suggest any motivation to modify the references. Therefore, the Applicants believe that claim 5 has overcome the Examiner’s rejection under U.S.C. §103.

New Claims 13-19

Applicants have added new claims 13-19; claim 13 is dependent on claim 5, claim 14 is dependent on claim 13, and claims 15-19 are all independent claims.

New claim 13 is dependent on claim 5 and is patentable for the same reasons that claim 5 is described as patentable above.

Furthermore, none of the references cited by Examiner, including Ogiso et al, does not disclose or suggest a protecting material of the reflector.

Claim 13 recites that the protecting material is disposed between the adhesive layer and a liquid crystal layer. On the other hand, Ogiso et al only teaches that the protective layer 4 protects the other layers when “recording and replaying are conducted from the protective layer side” (see page 11, [0103]). Therefore, the protecting material in Ogiso et al is different from that of claim 13.

For at least these reasons, none of the prior art cited by the Examiner, alone or in combination, anticipates or suggests the arrangement of new claim 13. Claim 14 is dependent on claim 13 and is patentable for the same reasons that claim 13 is described as patentable above.

Claim 15 recites that the inner surface of each recess includes two spherical surfaces having different radii, which should be noted that an example of a structure of

the reflector is shown in from page 17, line 1 to page 18, line 18, and Figures 4A and 4B.

Claim 16 recites that the recesses are formed with random depths, random pitches of the adjacent recesses and defined inclination angles of the inner surfaces, which should be noted that an example of a structure of the reflector is shown in from page 23, line 20 to page 25, line 24, and Figure 7.

Claim 17 recites that the recesses have a substantially constant reflectance in an acceptance angle range of ± 10 degrees around a regular reflection direction as a center, which should be noted that an example of a structure of the reflector is shown in from page 25, line 25 to page 26, line 23, and Figure 8.

Claim 18 recites that the reflectance is maximized at a reflection angle smaller than a reflection angle in a regular reflection direction, which should be noted that an example of a structure of the reflector is shown in both from page 17, line 16 to page 18, line 18, and Figure 5 and from page 30, line 12 to page 31, line 4, and Figure 11.

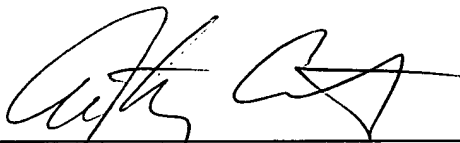
Claim 19 recites that an inner surface shape of the recess comprises a first curve extending from a peripheral edge of the recess to a vertex of the recess and a second curve continued from the first curve and extending from the vertex of the recess, which should be noted that an example of a structure of the reflector is shown in both from page 26, line 26 to page 30, line 11, and Figures 9-10, and from page 31, line 7 to page 32, line 15, and Figures 12-13.

As compared to each claim 15-19, none of the references cited by the Examiner discloses or suggests such a structure in related to inner surface of the each recess. For at least these reasons, new claims 15-19 are allowable.

Conclusion

In view of the amendments and arguments above, Applicants respectfully submit that pending claims 1-5 and new claims 13-19 are in condition for allowance and seek an early allowance thereof. If for any reason the Examiner is unable to allow the application in the next Office Action and believes that a telephone interview would be helpful to resolve any remaining issues, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Anthony P. Curtis', is written over a horizontal line.

Anthony P. Curtis, Ph.D.
Registration No. 46,193
Attorney for Applicants

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, ILLINOIS 60611-5599
(312) 321-4200